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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,619	03/01/2002	Don R. Stevenson	47399.0015	1903

24115 7590 09/05/2003

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EXAMINER
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THEXTON, MATTHEW

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 09/05/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/086,619	Applicant(s) STEVENSON ET AL.	
	Examiner Matthew A. Thexton	Art Unit 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 42-82 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 42\*82 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on \_\_\_\_ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: _____                                    |

### DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

#### ***Claim Rejections - 35 USC § 112***

1. Claims 62-71 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 62-64 recite component (b) in terms of a molar ratio and in terms of a percentage. This is not understood since a molar ratio should be expressed as a fraction.

Claim 62 recites component (b) as having "an effective amount of Zinc." This is indefinite since no thing or event is recited to which the Zinc is to be effective.

Claims 63 and 64 in component (a) recite Zinc as limited to a range of values of ppm. This not understood since it is already specified relative to phosphorus and there are no other components present. This is apparently a reference to dosage in a polymer or resin, but these claims are directed to an additive formulation and no polymer or resin is present.

2. Claims 72-82 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 72-75, component (b) recites the amount of Zinc in terms of parts per million (ppm) and then further as "per 100 parts of a resin." Does this

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mean that the ppm values are further modified by a factor of 100, i.e. "50 to 800 ppm per hundred parts resin" is 0.5 to 8 ppm of resin? If the latter is intended, is should be clearly stated. However, this is indefinite since there is no resin present and the claims are directed to an additive formulation.

In claims 73-75, component (a) is recited as being present in range of value of phr. This is apparently a reference to dosage in a polymer or resin but these claims are directed to an additive formulation and no polymer or resin is present.

3. Claims 42-51 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 42, component (c) recites the amount of Zinc in terms of parts per million (ppm) and then further as "per 100 parts of a resin." Does this mean that the ppm values are further modified by a factor of 100, i.e. "50 to 800 ppm per hundred parts resin" (this is actually 0.5 to 8 ppm of resin)? It seems from the specification that what is intended is simply "50 to 800 ppm Zinc."

4. Claims 52-61 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 52, component (c) recites the amount of Zinc in terms of parts per million (ppm) and then further as "per 100 parts of a resin." Does this mean that the ppm values are further modified by a factor of 100, i.e. "50 to 800 ppm per

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hundred parts resin" (this is actually 0.5 to 8 ppm of resin)? It seems from the specification that what is intended is simply "50 to 800 ppm Zinc."

### ***Claim Objections***

1. Claim 51 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The esters denoted XI, XII, XIII, and XV are not subsets of the esters of claim 49 from which claim 51 depends.
2. Claim 61 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The esters denoted XI, XII, XIII, and XV are not subsets of the esters of claim 59 from which claim 61 depends.
3. Claim 71 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The esters denoted XI, XII, XIII, and XV are not subsets of the esters of claim 70 from which claim 71 depends.
4. Claims 79 and 80 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a

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previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The ester denoted "PE phosphite" is not a subset of the esters of claim 72 from which claim 79 depends.

### ***Specification***

The disclosure is objected to because of the following informalities:

The information regarding the examples presented in Tables III, V, VII, IX, XI, XIII, XIX, XXI is confusing because the term "phr" normally refers to components added to 100 pounds of a base material, however, in these tables the component 'PVC Resin' is indicated as being added at 100 phr, which contradicts its apparent presence as the base material. If it is not the base material, then what is? If it is the base material then it appears it should be indicated as present as 100 pounds, not 100 phr.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 102***

Claims 62-77, and 79 are rejected under 35 U.S.C. 102(b) as being anticipated by Valdiserri (US 4614756).

Applicants claims 72-82 are comprising and hence do not preclude the tin additive of the reference, which does not appear to violate the limitation "essentially toxic-metal free."

Applicants claims 62-71 are "consisting essentially of" and hence do not preclude the tin additive of the reference, which does not appear to violate the limitation "essentially toxic-metal free."

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These claims are drawn to additive formulations which are devoid of resin, hence the Zinc limitation relative to dosage in resin is ineffective since no resin is present in the claimed liquid. Examples 3, 6, 9, 12, 15, and 18 in the reference employ 12 times the amount of the phosphorus additive as the Zinc additive which appears to anticipate the proportions claimed. The reference discloses to prepare the stabilizer composition and then add to the PVC (column 2, lines 36-43, 52-53), thus anticipating formulations as claimed.

Claims 66-71 depend from claim 65 and require the formulation to have a property evidenced by a specified test. The claims encompass the formulations disclosed and exemplified by the reference. Such a property would either be inherent to the formulation of Valdiserri or not. The burden of overcoming the prima facie case of obviousness is applicant's.

***Claim Rejections - 35 USC § 103***

1. Claims 78 and 80-82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Valdiserri (US 4614756).

The species of phosphite esters in these claims are exemplified by the reference. The reference suggests many phosphite esters (column 2, lines 10-31). It would have been obvious to one of ordinary skill in the art at the time of the invention to follow the suggestion of the reference and employ any of the various phosphite esters suggested with a reasonable expectation of success.

2. Claims 62-68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minagawa, et al. (US 4282141).

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Phosphite esters of group III are disclosed by the reference. The reference teaches "environmentally acceptable" polymers which comprise Zinc salt (column 10, lines 55-65) and alkylaryl phosphite (column 8, line 31 to column 9, line 36), both at doses which overlap the present claims. Liquid formulations are taught (column 11, lines 55-65) and when combined with the composition teachings (column 8 line 31 to column 9 line 40 and column 10 lines 55-65) claims 62-68 are met. The volatility limitations of claims 66-68 are inherent. Although no one example anticipates applicant's claims, the broad teaching suggests modifications and ranges which meet the claims. It would have been obvious to one of ordinary skill in the art at the time of the invention to follow the suggestions of the reference with a reasonable expectation of success.

3. Claims 42-49, 52-59, 62-69, 72, 73, 79 and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Housel (US 4340514).

Housel teaches "non-toxic" liquid stabilizers for halogenated hydrocarbon resins. The Zinc component (column 2, lines 15-40) is a carboxylate, present as Zinc in the mixture at 0.1 to 3.5 percent (column 5, lines 35-38) which is compounded with the resin at 0.25 to 4 percent of the resin (column 1, lines 59-61). 0.1 to 3.5 percent Zn compounded at 0.25 to 4.0 percent of resin results in 2.5 to 1400 phr, which overlaps applicant's claimed levels of Zinc. The phosphite component (column 3, line 39 to column 4, line 54) may be selected from multiple species including alkylaryl phosphites and distearyl/pentaerythritol diphosphite (column 4, line 43) present in the mixture at about 0.93 to 10.28 percent as P



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(column 5, lines 35-41), which when translated to molar ratio to Zinc overlaps applicant's claimed ratios.

The volatility limitations of claims 46-51, 56-61, and 66-71 are inherent.

The phosphites disclosed meet the claims including claim 80 to pentaerythritol phosphite. Examples 12 and 14 suggest to modify example 4 to increase the ratio of phosphorus within the ranges taught. Although no one example anticipates applicant's claims, the broad teaching suggests modifications and ranges which meet the claims. It would have been obvious to one of ordinary skill in the art at the time of the invention to follow the suggestions of the reference with a reasonable expectation of success.

The reference does not disclose mixtures "essentially free" of Calcium as required of claims 50, 51, 60, 61, 70, and 71. The reference does not disclose any of the species of Zinc carboxylates of claims 74-77. The reference does not disclose the phosphites of claims 76-78, 81 or 82.

4. Claims 42-83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rhodes, et al. (US 3755200) in view of Nosu et al. (US 5120783) and official notice.

Claims 42-51 comprise halogenated resins formulated with specified genera of phosphite esters and Zinc compounds where the dose of Zinc is limited to 50 to 800 ppm, 100 to 500 ppm, or 100-250 ppm. Claims 46-51 further require volatility limitations. Claims 48-51 require a lesser number of specified genera of phosphite esters. Claim 51 requires the phosphite esters be selected from a

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Markush group of compounds. Claims 50 and 51 require that the resin formulations be essentially free of Barium, Cadmium and Calcium.

Claims 52-61 parallel claims 42-51 and comprise halogenated resins formulated with specified genera of phosphite esters and Zinc compounds where the dose of Zinc is limited to 50 to 800 ppm, 100 to 500 ppm, or 100-250 ppm, further specifying that the ratio of P to Zn range from about 80 to 4, from about 75 to 6, or from about 73 to 8. Claims 56-61 further require volatility limitations. Claims 58-61 require a lesser number of specified genera of phosphite esters. Claim 61 requires the phosphite esters be selected from a Markush group of compounds. Claims 60 and 61 require that the resin formulations be essentially free of Barium, Cadmium and Calcium.

Claims 62-71 consist essentially of "essentially toxic-metal free" liquid mixtures of specified genera of phosphite esters and Zinc, further specifying that the ratio of P to Zn be satisfied, but in language which is not understood and is rejected under 35 USC 112 hereinabove. Claims 66-71 further require volatility limitations through a property of weight loss in a specified test. Claims 68-71 require a lesser number of specified genera of phosphite esters. Claims 70 and 71 require that the resin formulations be essentially free of Barium, Cadmium and Calcium. Claim 71 requires the phosphite esters be selected from a Markush group of eight species of phosphite esters.

Claims 72-82 comprise additive mixtures for polyvinyl chloride of specified genera of phosphite ester selected from a Markush group of four genera and Zinc, further specifying that the amount of Zn be limited, but in language which is

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not understood and is rejected under 35 USC 112 hereinabove. Claims 78-82 depend from claim 72 and are directed to smaller Markush groups. Claims 73-77 depend from claim 72 and further specify that the amount of P be limited, but in language which is not understood and is rejected under 35 USC 112 hereinabove. Claim 73 limits Zn to Zinc carboxylate. Claim 74 depends from claim 73 and sets forth a Markush group of Zinc carboxylates.

Rhodes teaches liquid stabilizer compositions for polyvinyl chloride (PVC) comprising phosphite esters (column 3 line 49 to column 4 line 35) and metal carboxylates including Zinc (column 3, lines 26-48). The desirability of non-toxic metals is taught (column 3, lines 41-48) with preference for Zinc stearate. The proportions are broadly taught (column 5, lines 18-25) and appear to overlap the claim limitations in claims 52-61.

The volatility limitations of claims 46-51, 56-61, and 66-71 are inherent.

The phosphites disclosed meet the claims except for those in claims 49-51, 59-61, 69-71, and 72-82. Official notice is cited merely to show what applicant admits with respect to the phosphite esters encompassed by the claims, which is that they were well known at the time of the invention for the purpose of stabilizing PVC. These known PVC stabilizers meet the narrower Markush group or species of claims 49-51, 59-61, 69-71, and 72-82. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use well known phosphites (e.g. as in Stevenson et al. (US 6362260), column 1, lines 10-46; cited to support the official notice) in combination with the teachings of Rhodes since their property is that sought by Rhodes.

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Nosu discloses halogen stabilized resins using similar stabilizing mixtures. Nosu is relied upon for its teaching that Cadmium and Barium are undesirable and that Zinc and Calcium are preferred for their low cost and low toxicity (column 1, lines 17-39). One of ordinary skill in the art, at the time the invention was made, would have found it obvious to avoid the Cadmium and Barium metal options and instead rely solely upon Zinc given the teachings of Nosu, particularly since no advantage is suggested in Rhodes for Cadmium or Barium over Zinc. Since there is no Calcium in the taught mixtures, the limitations of claims 50, 51, 60, 61, 70, and 71 are met.

### ***Response to Amendment***

The amendment filed 30 July 2003 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

Claims 46-51 and 56-61 require that the resin compositions exhibit a physical property in a specified test. The test is described in Figure 7 and at page 5, lines 18-23, and the physical property limitation was originally claimed in claims 5-10, 15-20, and 25-30. The original disclosure is directed to the physical property of the additive formulation, not the resin/additive formulation. Accordingly, claims 46-51 and 56-61 are directed to subject matter for which there is no support in the originally filed specification.

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Applicant is required to cancel the new matter in the reply to this Office Action.

***Response to Applicant's Argument***

By amendment the claims are now directed to additive formulations, claims 62-82, and to resin plus additive formulations, claims 42-61. Some issues with respect to USC 112 have been corrected, but others have not. The rejections are restated and are believed to provide direction for correction.

Rejection over Valdiserri. This rejection is only directed to the formulations that do not recite the presence of resin, now set forth in claims 62-82. Thus, applicant's comments with respect to the dosage of Zinc in the resin are unconvincing. The reference suggests additive formulations having the relative proportions of P and Zn which are encompassed by these claims. Applicant's comments regarding the presence of organo tin mercaptide in Valdiserri formulations are unconvincing since applicant's claims do not exclude this even by the use of "consisting essentially of" claim construct. It is noted that applicant's disclosure admits that the additive formulations may be used as only partial replacement of metal containing additives and thus it is concluded that other known additives are not contrary to utility of the invention and thus not excluded by "consisting essentially of."

Rejection over Minagawa. Applicant's comments regarding the alleged volatiles and volatility of formulations of the reference as contrasted with the present invention are unconvincing since the claims are commensurately limited. The comments with respect to the diketones is unconvincing since the present

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claims do not exclude them. The comments with respect to exact compounds encompassed by the reference are not conceded; the compounds do not have be substituted in both of the ortho positions.

Rejection over Housel. Applicant's comment regarding the dosage is addressed in the rejection, above. Applicant's comments regarding the toxicity of Zinc resinate are unconvincing. The reference asserts it is directed to a liquid additive formulation that is non-toxic, making it suitable for use where PVC products may come in contact with food, skin, or blood (column 1, lines 7-23). The cited Pesticides Action Network website information is largely composed of question marks and qualified statements about potentials and possibilities. The provenance of this website and the information is unknown. The most compelling information would come from the USEPA or USFDA.

Rejection over Rhodes in view of Nosu and Kotani. Applicant's comments regarding the alleged required components, a partial ester of a polyglycerol and an epoxy plasticizer, are not convincing since applicant's claims do not exclude these components, nor do applicant's claims require liquid which doesn't separate upon standing. Clearly, if the phosphite selected is a liquid, the Zinc carboxylate can be dissolved in it following the suggestion of Rhodes which employs liquid plasticizer to dissolve the Zinc carboxylate and the phosphite. Applicant's comments regarding the efficacy of TNPP in the present invention are unconvincing since this compound is encompassed by Group II of the claims and Rhodes further discloses aryl and alkylaryl phosphite esters which are encompassed by Groups I and III of the claims. Applicant's comment that the

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thrust of this reference is improved antistatic and antifogging properties which is not linked to improving heat or light stability of halogenated resin is unconvincing since the reference throughout (e.g., its title) discusses the oxidative, thermal and photochemical stabilization provided by the phosphites.

Applicant criticizes Kotani as being in an nonanalogous field, i.e., directed to polyolefins rather than halogenated polymers. The rejection has been rewritten to delete this reference with the substitution of official notice of the well known phosphites which one of ordinary skill in the art would find obvious to employ in the disclosure of Rhodes because they perform the same function as the phosphite esters suggested by Rhodes. Stevenson et al. (US 6362260) is cited to support the official notice.

Applicant's comments regarding Nosu are unconvincing. Nosu was cited for the purpose of establishing that Cadmium and Barium are undesirable and that Zinc and Calcium are preferred for their low cost and low toxicity. Applicant has not refuted the veracity of the Nosu teaching. The rejection asserts that it would have been obvious to one of ordinary skill in the art at the time of the invention to have employed this knowledge and apply it to Rhodes to avoid Barium and Cadmium. Applicant has not challenged this.

#### ***Cited Relevant Art***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Due to the broad nature of some of the claims, many references could be used to render the claims anticipated or obvious. The following references are deemed cumulative over the references applied in the

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above art rejections, but may become applicable should applicant's claims be amended.

Stevenson et al. (US 6362260) discloses some background information relating to the state of the art. In particular, column 1, lines 10-45 set forth the prevalence of phosphite esters in PVC resins.

Stevenson et al. (US 5532401) discloses phosphite ester stabilizers suitable for polyolefins or PVC or polyesters.

**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew A Thexton whose telephone number is 703-305-5085. The examiner can normally be reached on Monday-Friday, 8:30 to 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasudevan S Jagannathan can be reached on 703-306-2777. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-5665.



Matthew A. Thexton  
Primary Examiner  
Art Unit 1714